A137.E1284
JACC March 9, 2010
Volume 55, issue 10A

QUALITY OF CARE AND OUTCOMES ASSESSMENT

COMMON CAROTID ARTERY INTIMA MEDIA THICKNESS ALONE IS COMPARABLE TO CAROTID INTIMA MEDIA THICKNESS OF ALL CAROTID ARTERY SEGMENTS IN IMPROVING CORONARY HEART DISEASE RISK PREDICTION IN THE ATHEROSCLEROSIS RISK IN COMMUNITIES (ARIC) STUDY

ACC Poster Contributions
Georgia World Congress Center, Hall B5
Monday, March 15, 2010, 9:30 a.m.-10:30 a.m.

Session Title: Evaluation of Risk
Abstract Category: Outcomes Assessment
Presentation Number: 1139-169

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Background: Carotid intima media thickness and plaque information (CIMT) can improve coronary heart disease (CHD) risk prediction when added to traditional risk factors (TRF). However, CIMT measurements may be difficult to perform especially when one considers all segments [common, bulb and internal carotid artery (ACIMT)]. Of these segments, the common carotid artery IMT (CCIMT) is relatively easier to visualize and measure. We evaluated whether CCIMT alone improves CHD risk prediction and how well it compares to ACIMT in the ARIC study.

Methods: Ten year CHD risk prediction models using TRF alone, TRF + ACIMT and TRF + CCIMT were developed for the overall cohort, men and women. Area under the receiver operator characteristic curve (AUC), percent individuals reclassified, net reclassification index (NRI) and model calibration by Grønnesby Borgan test was estimated.

Results: There were 1722 incident CHD events in the 12576 individuals over a mean follow up of 15.2 years. The AUC for TRF only, TRF + ACIMT and TRF + CCIMT models were 0.743, 0.756 and 0.753 respectively. The NRI and clinical NRI (NRI in the intermediate risk group) when comparing the CIMT models with TRF only model, % reclassified and test for model calibration are described in the table.

Conclusion: CHD risk prediction can be improved by adding ACIMT or CCIMT to TRF. Overall, adding ACIMT to TRF seems to be marginally better than adding CCIMT to TRF, but, CCIMT seems to be a good alternative in those without CIMT measurement of all carotid artery segments.

Comparison of the IMT models and TRF only model in the overall cohort, men and women			
	TRF only	TRF+ACIMT	TRF+CCIMT
Overall (n=12,576)			
AUC	0.743	0.756	0.753
NRI (%)(#)	-	8.8	7.0
Clinical NRI (%) (#)	-	21.4	17.94
G-B test statistic	27.87 (p=0.001)	23.68 (p=0.004)	32.75 (p=0.0001)
% reclassified(#)	-	23.1	22.1
Men (n=5455)			
AUC	0.678	0.698	0.690
NRI (%) (#)	-	9.5	4.5
Clinical NRI (%) (#)	-	16.3	10.01
G-B test statistic	16.36 (p=0.06)	19.42 (p=0.02)	14.92 (p=0.09)
% reclassified(#)	-	31.15	28.05
Women (n=7121)			
AUC	0.764	0.776	0.776
NRI (%) (#)	-	8.08	7.6
Clinical NRI (%) (#)	-	23.03	23.03
G-B test statistic	9.04 (p=0.43)	7.76 (p=0.55)	11.3 (p=0.25)
% reclassified(#)	-	13.02	12.9
(#) Comparison of various models to the TRF only model; AUC: Area under the receiver operator characteristics curve; G-B: Grønnesby Borgan test of model calibration; NRI: Net reclassification index; clinical NRI: NRI in the intermediate (5-20% risk groups);			